2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 WESTERN'S PROPOSED ACTION

Western's Proposed Action is to approve the interconnection request.

2.2 DESCRIPTION OF SCE'S PROPOSED PROJECT

2.2.1 Overview

Under the Proposed Action, Western would execute an interconnection agreement to connect the wind project to Western's existing Sidney to North Yuma 230-kV transmission line (see Western [1991] for information regarding this transmission line). SCE would construct and operate a 130-MW wind energy facility on privately owned land on Peetz Table, east of Peetz, in Logan County, Colorado. Phase I would consist of about 60 MW to be constructed in 2005, pending successful completion of the environmental review process. The size and timing for the construction of subsequent phases is not known at this time, but the entire 130-MW project is evaluated in this EA. Although the project would have an installed capacity of 130-MW, it is expected to operate at about 38% capacity, so actual output would average about 49 MW. SCE has obtained or will obtain leases from the private landowners to construct and operate the wind project. For the purpose of this EA, the project area includes all lands within the Project Area Boundary on Figure 1.1. The project footprint (i.e., the area to be disturbed during construction and throughout the 40-year life-of-project) would be limited to the areas immediately adjacent to turbines, access roads, and other facilities (Table 2.1). For the purposes of field surveys for sensitive resources (i.e., Federal- and state-listed threatened, endangered, proposed, and candidate [TEP&C] species and their habitat; wetlands and other waters of the U.S. [WUS]; and cultural resources), a 2,000-ft wide corridor, centered on turbine strings and access roads, and a 50-ft wide corridor centered on collection line locations and crane paths (see below) were surveyed within the project area. These 2,000-ft and 50-ft wide corridors (Figure 2.1) include 6,424 acres within the 22,054-acre project area. Surveys were confined to the project area because access was not available on the private lands outside or the project area.

Table 2.1 Estimated Surface Disturbance Acreage.

Disturbance Type	Initial Disturbance (acres)	Life-of-project Disturbance (acres)
Turbine assembly areas/pads[1]	80	3
Turbine string corridors (collection line trenches and access roads)[2]	102	47
Other access roads (outside turbine corridors)[3]	8	4
Staging areas and turnarounds[4]	5	5
Collection line trenches (outside turbine corridors)[5]	14	0
Crane paths[6]	0	0
Overhead collection lines[7]	3	<0.1
Substation and O&M building	10	10
Total	222	69

1 Assumes a 200 x 200 ft assembly area during construction and a 40 x 40 ft permanent pad; assumes 87 1.5-MW turbines

2 Assumes 24 mi of corridors, 35 ft wide during construction, reclaimed to 16 ft wide for the life-of-project.

3 Assumes 2 mi of access roads outside of turbine corridors, 35 ft wide during construction, reclaimed to 16 ft wide for the life-of-project.

4 Assumes 5 1.0-acre staging areas/turnarounds.

5 Assumes 28 mi of collection line trenches outside turbine corridors, up to 4 ft wide during construction, completely reclaimed for the life-of-project.

6 Crane paths would not be constructed but would result from the overland passage of the large crane.

7 Assumes 1 mi of overhead collection lines, 25 ft wide during construction, reclaimed except for pole locations for life-of-project (100 poles each occupying 2 ft x 2 ft = 0.01 acre).

Note that, while the 2,000-ft wide survey corridor includes the 130-MW project, the 50-ft corridor is for Phase I only. Additional surveys would be required to cover the collection systems and crane paths for subsequent phases. During construction, a large crane would be used to erect towers and turbines, and it would be walked either along project access roads, along collection line corridors, or cross-country along corridors referred to as crane paths.

The wind project would consist of approximately 87 1.5-MW or 72 1.8-MW wind turbines and associated facilities (see Figure 2.1). The wind turbine generators would be supported by 80-m tubular towers (Figure 2.2). Towers and generators would be white. Support facilities would

include step-up transformers, a substation, underground and overhead power collection and communication lines, roads, and an operation and maintenance (O&M) building.

Access to the project area would be via Colorado Highway 113 and a network of approximately 41.4 mi of existing county roads within the project area (see Figure 2.1). Access to wind project facilities, including individual turbines, would be provided by new access roads to be constructed for the purposes of wind project construction and operation.

2.2.2 Construction

The proposed project would use standard construction procedures as used for other wind project developments in the western U.S. These procedures, with minor modifications to allow for site-specific circumstances, are summarized below.

Wind project construction would entail the following activities, listed in approximate order of occurrence, although some of the activities occur simultaneously:

- road and pad construction;
- digging, drilling, and possible blasting of foundation footings for towers;
- pouring concrete foundations for turbine towers, meteorological towers, transformer pads, and substations;
- trenching for underground utilities;
- placement of underground electrical and communications cables in trenches;
- overhead electrical power system construction;
- installation of tower lights;
- electrical connection to tower;
- tower assembly, erection, and equipment installation;
- final testing, and
- final road grading, erosion control, site clean-up, and reclamation.

Construction equipment would include standard dirt-moving equipment, cranes, trucks, and forklifts (Table 2.2).

2.2.2.1 Road and Pad Construction

Access roads would be constructed in accordance with landowner easement agreements. Roads would be located to minimize disturbance and maximize transportation efficiency and to avoid sensitive resources and steep topography. An estimated 26 mi of new access roads would be required for the project (see Figure 2.1 and Table 2.1); 24 mi of which would be located adjacent to turbine strings.

Roads would be built and maintained to provide safe operating conditions at all times. The minimum full surfaced travelway width would be 16 ft; overall surface disturbance could be up to 35 ft wide (see Table 2.1 and Figure 2.3). Disturbance width may increase in steeper areas due to cuts and fills necessary to construct and stabilize roads on slopes.

Table 2.2 List of Construction Equipment Typically Used for Wind Project Construction.

Equipment	Use
D7 bulldozer	Road and pad construction
Grader	Road and pad construction
Water trucks	Compaction, erosion and dust control
Roller/compactor	Road and pad construction
Backhoe	Digging foundations and trenches for utilities
Trenching machine	Digging trenches for underground utilities
Truck-mounted drill rig	Drilling meteorological tower foundations
Concrete trucks and pumps	Pouring tower and other structure foundations
Cranes	Tower and turbine erection
Dump trucks	Hauling road and pad material
Flatbed trucks	Hauling towers and other equipment
Pickup trucks	General use and hauling minor equipment
Small hydraulic cranes and forklifts	Loading and unloading equipment
Four-wheel drive all-terrain vehicles (ATVs)	Rough grade access and underground cable installation
Rough terrain forklifts	Lifting equipment

Topsoil removed during new road construction would be stockpiled in elongated piles within road easements. Topsoil would be re-spread on cut-and-fill slopes and these areas would be reclaimed in accordance with easement agreements.

During construction and O&M of the wind project, traffic would be restricted to the roads developed for the project. Use of unimproved roads would be restricted to emergency situations. Speed limits would be set to ensure safe and efficient traffic flow. Signs would be placed along the roads, as necessary, to identify speed limits, travel restrictions, and other standard traffic control information.

Turbine pads would be constructed using standard cut-and-fill procedures.

2.2.2.2 Foundations and Tower Erection

Turbine towers would be anchor-bolted to concrete foundations. SCE either would use a deep foundation (Figure 2.4) or a shallow foundation (Figure 2.5). Foundations would be excavated using a backhoe or other appropriate excavation equipment. Concrete molds would be used to pour two rings of concrete, and steel anchor bolts would be embedded in the concrete. The foundations would be backfilled and allowed to cure prior to tower erection. Tower foundations are designed to withstand 120 mph winds on the towers.

Turbine tower assembly and erection would occur within the designated easement. The turbine string corridor would consist of tower assembly areas and pads (200 x 200 ft during construction) and access roads (see Figure 2.3). Trenches for collection and communications lines would be excavated in access road rights-of-way (ROWs) or in cross-country collection line easement corridors. Following construction, portions of the tower assembly areas, pads and roads and all trenched areas would be reclaimed. Turbine assembly areas would be reduced to a 40 x 40-ft pad area and road/trench width would be reduced to approximately 16 ft.

Approximately three meteorological towers would be erected. Meteorological towers approximately 197 ft to 263 ft tall would be erected, primarily within turbine string corridors, on 3-ft diameter pier foundations. Foundation depth would vary depending on local soil conditions. Foundations would be drilled using a truck-mounted drill and then filled with concrete. The meteorological towers would be anchored with guy wires.

Other facilities requiring foundations would include transformer pads, the substation, and the O&M building. These foundations would be constructed using standard cut-and-fill procedures and pouring concrete in a shallow slab or using a precast structure set on an appropriate depth of structural fill.

2.2.2.3 Trenching and Placement of Underground Electrical and Communications Cables

Underground electrical and communications cables would be placed in approximately 2- to 4-ft wide trenches along the length of each turbine string corridor. In some cases, trenches would run from the end of one string to the end of an adjacent string to connect more turbines together via the underground network. Trenches would be excavated to below frostline and electric distribution and communications cables would be placed in the trench using trucks. Electrical cables would be installed first and the trench would be partially backfilled prior to placement of the communications cables. Trenches would be backfilled and the area revegetated concurrently with revegetation of other construction areas. An estimated 87 transformers would be used to step up low voltage power to 34.5 kV and approximately 54 mi of underground power cable would be installed.

2.2.2.4 Overhead Electrical Power and Communication System

Most of the project's electrical and communications systems would be installed underground. About 1.0 mi of overhead collection lines may be installed near the substation to connect the wind project to the substation. These would be installed along existing county roads. All overhead collection lines would be installed in conformance with Western's standards, the

National Electric Safety Code, the American National Standards Institute, and *Suggested Practices for Raptor Protection on Power Lines - The State of the Art in 1996* (Avian Power Line Interaction Committee 1996). Wooden poles with 45- to 55-ft installed height would be erected to the substation. Temporary disturbance width would average 20 ft and all disturbance would be confined to a 50-ft easement.

2.2.2.5 Installation of FAA-required Lights

Federal Aviation Administration (FAA)-required lights would be installed on the nacelle prior to lifting the nacelle onto the turbine tower. Power to the lights would typically be provided by the turbine; when turbines are not generating power, power to the lights would be provided by the existing grid.

2.2.2.6 Substation and O&M Building Construction

A substation would be constructed on private land at the junction of the wind plant power line and Western's 230-kV transmission line. The substation would house transformers and other facilities to step up medium voltage power from the wind project's 34.5-kV power lines to high voltage for delivery to the 230-kV transmission line. The substation would be similar to substations typically used on transmission systems in the region and would be less than 10 acres in size. Small concrete foundations would be constructed for transformers and other components within the substation, but the majority of the yard would be covered with crushed rock. Crushed rock, sand, and gravel would be obtained from existing permitted sources. The substation would be fenced with a 7.0-ft high chain-link fence topped with three strands of barbed wire, for a total fence height of 8.0 ft. Access gates would be locked at all times and warning signs would be posted for public safety.

The O&M building would be constructed adjacent to the substation and within the fenced area. It would consist of a tan metal building approximately 30 ft wide x 50 ft long. The prefabricated building would be installed on a concrete slab and would be wired for electricity to run lights

and power tools. The O&M building would likely contain a simple plumbing system, in which fresh water is trucked in and stored in a cistern, and used water is stored in holding tanks and then disposed of at an approved off-site facility. Alternatively, SCE may opt to construct a septic system. Any septic system would be constructed in conformance with state and county regulations and permitted accordingly.

2.2.2.7 Final Testing

Final testing would involve mechanical, electrical, and communications inspections to ensure that all systems are working properly. Performance testing would be conducted by qualified windpower technicians and would include checks of each wind turbine and the control system prior to final turbine tower and meteorological tower commissioning. Electrical tests of the wind project components (i.e., turbines, transformers, and collection systems) and the substation would be performed by qualified electricians to ensure that all electrical equipment is operational within industry and manufacturer's tolerances and is installed in accordance with design specifications. All installations and inspections would be in compliance with applicable codes and standards (Table 2.3).

2.2.2.8 Final Road Grading, Erosion Control, and Site Clean-up

During final road grading, surface flows would be directed away from cut-and-fill slopes and into ditches that outlet to natural drainages. SCE would be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) as required by the U.S. Environmental Protection Agency (EPA), and the plan would include standard sediment control devices (e.g., silt fences, straw bales, netting, soil stabilizers, check dams) to minimize soil erosion during and after construction. SCE or their agents would rent dumpsters from a local sanitation company to collect and dispose of waste materials. Following construction, SCE would ensure that all unused construction materials and waste are picked up and removed from the project area. SCE would hire a contractor to provide an adequate number of portable toilets in the project area

Table 2.3 Applicable Electrical Codes, Standards, and References.

- National Electrical Safety Code (NESC)
- National Electrical Manufacturer's Association (NEMA)
- American Society for Testing and Materials (ASTM)
- Institute for Electrical and Electronic Engineers (IEEE)
- National Electrical Testing Association (NETA)
- American National Standards Institute (ANSI)
- State and Local Codes and Ordinances
- Insulated Power Cables Engineers Association (IPCEA)
- Occupational Safety and Health Administration (OSHA) Part 1910, Subpart S, 1910.308.

during construction and would ensure that sanitary wastes would be removed and disposed of at an approved facility in accordance with state and local laws.

Contractors would provide trash barrels or dumpsters to collect construction trash, lunch wrappers, etc., and these solid wastes would be routinely removed and disposed of at an approved facility. No waste disposal by incineration would occur. The O&M building would be used to store parts and equipment need for O&M. While SCE does not anticipate the use of any liquid chemicals within the project area, SCE will inspect and clean up the project area following construction to ensure that no solid (e.g., trash) or liquid wastes (e.g., used oil, fuel, turbine lubricating fluid) were inadvertently spilled or left on-site. A final site cleanup would be made in conjunction with construction site reclamation.

Cleanup crews would patrol construction sites on a regular basis to remove litter. A final site cleanup would be made prior to shifting responsibilities to O&M crews. O&M crews would continue to use dumpsters for daily maintenance.

2.2.3 Public Access and Safety

Public access to private lands is already restricted by landowners and would continue to be restricted in accordance with easement agreements. The substation and O&M building would be fenced as required for public safety, but no other fencing is proposed at this time.

The FAA typically requires every structure taller than 200 ft above ground level to be lighted, but in the case of wind power developments, it will allow a strategic lighting plan that provides complete conspicuity to aviators but does not require lighting every turbine. SCE is developing a lighting plan to be submitted for FAA approval. An estimated 20-25% of the project's turbines would be designated for lighting with medium intensity dual red synchronously flashing night-time lights and either no daytime lights or white strobe daytime lights.

All fires would be extinguished immediately by SCE personnel, if there is no danger to life or personal safety, and the appropriate landowner and the county sheriff's department would be notified immediately. Some fire-fighting equipment would be located in vehicles and in the O&M building. If the fire cannot be extinguished by SCE personnel, the landowner and sheriff would be so advised. Fire deterrents within the wind project would include access roads, which may serve as fire breaks and regular clearing of vegetation from areas around transformers, riser poles, and the substation.

Safety signing would be posted around all towers (where necessary), transformers, and other high-voltage facilities, and along roads, in conformance with applicable state and Federal regulations.

2.2.4 Operations and Maintenance

SCE would operate and maintain the wind project. All turbines, collection and communications lines, substations, and transmission lines would be operated in a safe manner according to standard industry operation procedures. Routine maintenance of the turbines would be necessary

to maximize performance and detect potential difficulties. Each turbine would be remotely scanned by computer every day to ensure operations are proceeding efficiently. Any problems would be promptly reported to on-site O&M personnel, who would perform both routine maintenance and most major repairs. Most servicing would be performed up-tower, without using a crane to remove the turbine from the tower. Additionally, all roads, pads, and trenched areas would be regularly inspected and maintained to minimize erosion.

Access roads will be maintained during O&M to prevent off-road detours due to ruts, mud holes, landslides, etc. Roads would be maintained as needed; it is anticipated that maintenance would occur twice per year but more frequent maintenance would be performed, if needed, to maintain roads in an condition acceptable to the county (for county roads) and to the landowner (for private roads). All fuels and/or hazardous materials will be properly stored during transportation and at the job site. Workers will be instructed to keep all job sites in a sanitary and safe condition. Workers will be expected to respect the property rights of private landowners.

2.2.5 Work Force

Construction of the 130-MW project would require approximately 20 people per day for 180 days. Substation construction would require approximately 5 people for 90 days. Reclamation would require about 4 people for 30 days. Construction crews would likely work 10- or 12-hour work days, 6 days per week. Phase I construction would require about half this number. Most Phase I construction work would be completed during a 5-month construction period in 2005. Construction of subsequent phases would occur as Power Purchase Agreements are obtained. O&M would require an estimated 8-10 full-time personnel.

2.2.6 Traffic

Construction of wind project facilities would occur simultaneously, using single vehicles for multiple tasks. The average number of daily vehicle trips to the site would be about 15 vehicles, while the number of vehicles actually working on-site would be about 20. During normal O&M,

daily traffic to and on the site would include one or two four-wheel drive pickups. During both construction and O&M, SCE or its contractors will use water, as necessary, to control dust from traffic. Snow removal equipment (trucks equipped with wing-style blades) would be utilized as needed during winter.

2.2.7 Water Use

On average, the project, once completed, would use an estimated 0.2 acre-ft of water per year (Table 2.4). Water for construction and dust control would be obtained from permitted commercial or municipal sources such as Peetz or Sterling, Colorado, or Sidney, Nebraska, or local batch plants. For construction of the 130-MW project, an estimated 765,085 gallons of water would be used to mix concrete for turbine footings and substation foundation, for dust control, and for compaction. An estimated 754,377 gallons of this amount would be consumed in concrete for turbine foundations and 10,708 gallons would be used to construct the substation. An estimated 761,250 gallons would be used for road construction. An estimated 32,625 gallons (approximately 0.1 acre-ft) per year would be used for dust control for the 40 year operational life-of-project.

Table 2.4 Estimated Water Use Per Year and for the Life-of-Project.

Construction	Yards of Concrete/Facility	Gal/yd	Gal/Facility	No. Facilities	Total Gal
Turbines	299	29	8,671	87	754,377
Substation	292	29	8,468	1	8,468
Soil compaction (substation)					2,240
Roads	7,612.5 gal/day for 20 days/month for 5 months				761,250
Total water used during construction					1,526,335
Operation					
Water for dust suppression	32,625 gal/yr for 39 years of operation				1,272,375
Totals and Averages					
Total used for the 40-year life-of-project (Construction and operation)					2,798,710
Average water use/yr					69,968
Average water use/yr in acre-ft					~0.2

An estimated 1,526,335 gallons (approximately 4.7 acre-ft) of water would be consumed during construction of the 130-MW project. During the 39-year operation period, an additional 1,272,375 gallons (3.9 acre-ft) would be consumed. Total water usage over the 40-year life-of-project would be 2,798,375 gallons, so an average of 69,968 gallons (approximately 0.2 acre-ft) per year would be consumed.

2.2.8 Hazardous Materials

The only hazardous chemicals anticipated to be on-site are the chemicals contained in diesel fuel, gasoline, coolant (ethylene glycol), and lubricants in machinery. SCE and its contractors would comply with all applicable hazardous material laws and regulations existing or hereafter enacted or promulgated regarding these chemicals and would implement a Spill Prevention, Control, and Countermeasure Plan (SPCCP), as necessary. Hazardous chemicals contained in diesel fuel, gasoline, coolant (ethylene glycol), and lubricants would not be stored in Spring Canyon (the project area's only floodplain; see Section 3.4.1), nor would any vehicle refueling or routine maintenance occur in Spring Canyon. When work is conducted in and adjacent to Spring Canyon, fuels and coolants would be contained in the fuel tanks and radiators of vehicles or other equipment, so the chance of a spill would be negligible.

2.2.9 Reclamation and Abandonment

Reclamation would be conducted on all disturbed areas to comply with easement agreements. The short-term goal of reclamation would be to stabilize disturbed areas as rapidly as possible, thereby protecting sites and adjacent undisturbed areas from degradation. The long-term goal would be to return the land to approximate pre-disturbance conditions.

After construction is complete, temporary work areas would be graded to the approximate original contour and the area would be revegetated with approved seed mixtures. SCE would consult with the Natural Resources Conservation Service (NRCS) on appropriate reclamation methods and seed mixtures and would obtain approval from landowners to implement the

appropriate practices. Most post-construction work would entail stabilizing slopes; scarifying soils to reduce compaction; and reseeding unused disturbed areas including portions of turbine pads not required for O&M, road cuts-and-fills, underground power line trenches, and overhead power line routes. Approximately 69% of new disturbance would be reclaimed upon construction completion.

At the end of the project's useful life (about 40 years), SCE would obtain any necessary authorization from the appropriate regulatory agency or landowner to abandon the wind project. Turbines, towers, and transformers would be removed and recycled or disposed of at approved facilities. Foundations would be abandoned in place to a depth of 3 to 4 ft below grade. All private project roads would revert to landowner control. Underground power and communication lines would be abandoned in place; overhead power lines and poles would be removed. Reclamation procedures would be based on site-specific requirements and techniques commonly employed at the time the area is to be reclaimed and would include regrading, topsoiling, and revegetation of all disturbed areas. This EA does not address the potential that the project could be repowered (i.e., new or refurbished turbines could be installed after the life-of-project). Additional environmental analysis and permitting would be required if the site is not abandoned as currently proposed.

2.2.10 Western's Standard Construction, Operation, and Maintenance Practices

SCE proposes to implement Western's standard construction, operation, and maintenance practices, where applicable, to avoid and minimize impacts to the environment to the extent practicable (Table 2.5). These measures are part of SCE's proposed project and Western's Proposed Action and are considered in this EA's impact analysis.

2.2.11 Applicant-committed Mitigation Measures

SCE also proposes to implement the following mitigation measures to avoid, reduce, or eliminate project impacts related to SCE’s Proposed Action. These mitigation measures may be waived on

Table 2.5 Western's Standard Construction, Operation, and Maintenance Practices.

1. The contractor shall limit the movement of crews and equipment to the ROW, including access routes. The contractor shall limit movement on the ROW to minimize damage to residential yards, grazing land, crops, orchards, and property, and shall avoid marring the lands. The contractor shall coordinate with the landowners to avoid impacting the normal function of irrigation devices during project construction and operation.

2. When weather and ground conditions permit, the contractor shall obliterate all construction-caused deep ruts that are hazardous to farming operations and to movement of equipment. Such ruts shall be leveled, filled and graded, or otherwise eliminated in an approved manner. Ruts, scars, and compacted soils in hay meadows, alfalfa fields, pastures, and cultivated productive lands shall have the soil loosened and leveled by scarifying, harrowing, discing, or other approved methods. Damage to ditches, tile drains, terraces, roads, and other features of the land shall be corrected. At the end of each construction season and before final acceptance of the work in these agricultural areas, all ruts shall be obliterated, and all trails and areas that are hard-packed as a result of construction operations shall be loosened and leveled. The land and facilities shall be restored as nearly as practicable to the original condition.

3. Water turnoff bars or small terraces shall be constructed across all ROW trails on hillsides to prevent water erosion and to facilitate natural revegetation on the trails.

4. The contractor shall comply with all Federal, state, and local environmental laws, orders and regulations. Prior to construction, all supervisory construction personnel will be instructed on the protection of cultural and ecological resources. To assist in this effort, the construction contract will address: a) Federal and state laws regarding antiquities and plants and wildlife, including collection and removal; and b) the importance of these resources and the purpose and necessity of protecting them.

5. The contractor shall exercise care to preserve the natural landscape and shall conduct his construction operations so as to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the work. Except where clearing is required for permanent works, approved construction roads, or excavation operations, vegetation shall be preserved and shall be protected from damage by the contractor's construction operations and equipment.

6. On completion of the work, all work areas except access trails shall be scarified or left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion. All destruction, scarring, damage, or defacing of the landscape resulting from the contractor's operations shall be repaired by the contractor.

7. Construction trails not required for maintenance access shall be restored to the original contour and made impassable to vehicular traffic. The surfaces of such construction trails shall be scarified as needed to provide a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion.

8. Construction staging areas shall be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent. On abandonment, all storage and construction materials and debris shall be removed from the site. The area shall be regraded, as required, so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion.

Table 2.5 (Continued)

9. Borrow pits shall be so excavated that water will not collect and stand therein. Before being abandoned, the sides of borrow pits shall be brought to stable slopes, with slope intersections shaped to carry the natural contour of adjacent, undisturbed terrain into the pit or borrow area, giving a natural appearance. Waste piles shall be shaped to provide a natural appearance.

10. Construction activities shall be performed by methods that prevent entrance or accidental spillage of solid matter, contaminants, debris, and other objectionable pollutants and wastes into flowing streams or dry water courses, lakes, and underground water sources. Such pollutants and wastes include, but are not restricted to, refuse, garbage, cement, concrete, sanitary waste, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.

11. Dewatering work for structure foundations or earthwork operations adjacent to, or encroaching on, streams or water courses will not be performed without prior approval from appropriate state agencies.

12. Excavated material or other construction materials shall not be stockpiled or deposited near or on stream banks, lake shorelines, or other water course perimeters where they can be washed away by high water or storm runoff or can in any way encroach upon the actual water source itself.

13. Waste waters from construction operations shall not enter streams, water courses, or other surface waters without use of such turbidity control methods as settling ponds, gravel-filter entrapment dikes, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates, or other approved methods. Any such waste waters discharged into surface waters shall be essentially free to settleable material. Settleable material is defined as that material that will settle from the water by gravity during a 1-hour quiescent period.

14. The contractor shall utilize such practicable methods and devices as are reasonably available to control, prevent, and otherwise minimize atmospheric emissions or discharges of air contaminants.

15. Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments or other inefficient operating conditions shall not be operated until corrective repairs or adjustments are made.

16. Burning or burying of waste materials on the ROW or at the construction site will not be allowed. The contractor shall remove all waste materials from the construction area. All materials resulting from the contractor's clearing operations shall be removed from the ROW.

17. The contractor shall make all necessary provisions in conformance with safety requirements for maintaining the flow of public traffic and shall conduct construction operations so as to offer the least possible obstruction and inconvenience to public traffic.

18. SCE will apply necessary mitigation to eliminate problems of induced currents and voltages onto conductive objects sharing a ROW, to the mutual satisfaction of the parties involved. SCE will install fence grounds on all fences that cross or are parallel to the proposed line.

19. The contractor will span riparian areas located along the ROW and avoid physical disturbance to riparian vegetation. Equipment and vehicles will not cross riparian areas on the ROW during construction and operation activities. Existing bridges or fords will be used to access the ROW on either side of riparian areas.

a case-by-case basis when deemed appropriate by Western after thorough analysis determines that the resource for which the measure was put in place would not be significantly impacted.

2.2.11.1 Fire Control

SCE would notify the appropriate landowners and the sheriff's office of any fires observed during construction. In the event of a fire, SCE or its contractors would initiate fire suppression actions in the work area. Suppression would continue until the fire is out or until the crew is relieved by an authorized representative of the landowner on whose land the fire occurred. Heavy equipment would not be used for fire suppression outside the project area without prior approval of the landowner unless there is imminent danger to life or property. SCE or its contractors would be responsible for all costs associated with the suppression of fires and the rehabilitation of fire damage resulting from its operations.

SCE would designate a representative to be in charge of fire control during construction. The fire representative would ensure that each construction crew has appropriate types and amounts of fire fighting tools and equipment, such as extinguishers, shovels, and axes available at all times. SCE would, at all times during construction and operation, require that satisfactory spark arresters be maintained on internal combustion engines.

2.2.11.2 Cultural Resources

Class III cultural resource inventories have been completed on all land proposed for surface disturbance and along crane paths (see Figure 2.1). SCE and its contractors would train their employees on relevant Federal regulations protecting cultural resources. Any cultural resource (historic or prehistoric site or object) discovered by SCE or any person working on its behalf would be immediately reported to Western. SCE would suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by Western. An evaluation of the discovery would be made by Western to determine appropriate actions to prevent the loss of significant cultural or scientific values. Western may consult with the State

Historic Preservation Office (SHPO) to determine NRHP eligibility or mitigation measures. SCE would be responsible for the cost of evaluation, and any decision as to proper mitigation measures would be made by Western after consulting with SCE.

2.2.11.3 Paleontologic Resources

Any paleontological resource discovered by SCE or any person working on its behalf would be immediately reported to the Colorado Geological Survey (CGS). SCE would suspend all operations within 100 ft of such discovery until written authorization to proceed is issued by the CGS. An evaluation of the discovery would be made by the CGS to determine appropriate actions to prevent the loss of significant scientific values. SCE would be responsible for the cost of evaluation, and any decision as to proper mitigation measures would be made by the CGS after consulting with SCE.

Construction personnel would be instructed about the types of fossils that may be encountered and the steps to take if fossils are discovered during construction. Instruction would stress the nonrenewable nature of paleontologic resources and that fossils are part of Colorado's prehistoric heritage and should be preserved for study.

2.2.11.4 Air Quality/Noise

All vehicles and construction equipment would be maintained to minimize exhaust emissions and would be properly muffled to minimize noise. Disturbed areas would be watered as necessary to suppress dust.

2.2.11.5 Vegetation

The following measures would be implemented to minimize impacts to vegetation.

- Surface disturbance would be limited to that which is necessary for safe and efficient construction.

- All surface-disturbed areas would be restored to the approximate original contour and reclaimed in accordance with easement agreements.
- Removal or disturbance of vegetation would be minimized through site management (e.g., by utilizing previously disturbed areas, designating limited equipment/materials storage yards and staging areas, scalping) and reclaiming all disturbed areas not required for operations.

2.2.11.6 Noxious Weeds

Noxious weeds would be mechanically controlled in all surface-disturbed areas. If herbicides are needed to control weeds, they would be applied by a licensed contractor. Equipment would be washed at a commercial facility prior to construction and on-site during construction if weeds are encountered in the project area.

2.2.11.7 Streams and Wetlands

SCE would comply with all Federal regulations concerning the crossing of WUS, as listed in Title 33 *Code of Federal Regulations* [C.F.R.] Part 323. No perennial streams or wetlands occur in the project footprint area (see Sections 3.3.1 and 3.4.1). The use of heavy equipment and other construction activities within 500 ft of ephemeral surface waters would be necessary. To minimize impacts from these activities, SCE would implement the following measures.

- Refueling and staging would occur at least 300 ft from the edge of a channel bank at all stream channels.
- Sediment control measures would be utilized.
- Vegetation disturbance would be limited to that which is necessary for construction.

2.2.11.8 Soils

The following measures would be implemented to minimize impacts to soils.

- No construction or routine maintenance activities would be conducted when soil is too wet to adequately support construction equipment (i.e., if such equipment creates ruts in excess of 4 inches deep).
- Certified weed-free straw mulches, certified weed-free hay bale barriers, silt fences, and water bars would be used to control soil erosion.
- Soil erosion control measures would be monitored, especially after storms, and would be repaired or replaced if needed.
- Surface disturbance would be limited to that which is necessary for safe and efficient construction.
- All surface-disturbed areas would be restored to the approximate original contour and reclaimed in accordance with easement agreements.
- Construction activities in areas of moderate to steep slopes (≥15-20%) would be avoided, where possible.

2.2.11.9 Wildlife

The following measures would be implemented to minimize impacts to wildlife.

- SCE would prohibit hunting, fishing, dogs, or possession of firearms by its employees and its designated contractor(s) in the project area during construction, operation, and maintenance.
- Surface disturbance would be avoided or minimized in areas of high wildlife value (e.g., prairie dog colonies and shelterbelts).
- SCE would advise project personnel regarding appropriate speed limits on roads to minimize wildlife mortality due to vehicle collisions. Potential increases in poaching would be minimized through employee and contractor education regarding wildlife laws. If violations are discovered, the offending employee or

contractor would be disciplined and may be dismissed by SCE and/or prosecuted by the Colorado Division of Wildlife (CDOW).

- Travel would be restricted to designated roads; no off-road travel would be allowed except in emergencies.

The following additional measures would be implemented to minimize impacts to raptors and other Federal- and state-listed threatened, endangered, proposed, and candidate (TEP&C) species or sensitive wildlife species.

- Western would consult and coordinate with FWS and CDOW for all mitigation activities related to raptors and species, TEP&C species, and their habitats.
- Raptor nest surveys would be conducted within a 1.0-mi radius of proposed construction areas during the raptor nesting season (January 1 through July 31) to determine nest location, activity status, and, if possible, species prior to construction.
- Surface occupancy and surface-disturbing activities would be prohibited as follows (Craig 2002):
  - golden eagle - no surface occupancy within 0.25 mi of nest; no construction within 0.25 mi of nest from January 1 to July 15;
  - ferruginous hawk - no surface occupancy within 0.5 mi of nest; no construction within 0.25 mi of nest from February 1 to July 15;
  - red-tailed hawk - no surface occupancy within 0.3 mi of nest; no construction within 0.3 mi of nest from February 15 to July 15;
  - Swainson's hawk - no surface occupancy within 0.25 mi of nest; no construction within 0.25 mi of nest from April 1 to July 15;
  - prairie falcon - no surface occupancy within 0.5 mi of nest; and
  - burrowing owl - no construction within 225 ft of nest from April 1 to July 31; in addition, SCE has committed to avoiding prairie dog colonies.

  Since the CDOW does not have specific avoidance buffers and dates for other owls, SCE would implement Western's standard 0.25 mi construction avoidance buffer for active nests (personal communication, May 2005, with John Bridges,

Western). If other species are found nesting in the project area, Western's standard buffer would be applied unless otherwise approved by Western. The buffer distance and restriction dates may vary on a case-by-case basis as determined by the FWS or CDOW, depending on such factors as the activity status of the nest, species involved, natural topographic barriers, line-of-sight distances, and other conflicting issues such as cultural values. Exceptions may be granted in writing by the FWS and/or CDOW.

- Additional mitigation for raptors would be designed on a site-specific basis, as necessary, in consultation with the FWS and CDOW. SCE would notify the FWS or CDOW immediately if raptors are found nesting on project facilities (i.e., power poles, towers).
- Power line construction would follow the recommendations of the Avian Power Line Interaction Committee (1996) to avoid electrocution of raptors and other avifauna.
- SEC would conduct post-construction mortality monitoring in accordance with National Wind Coordinating Committee recommendations until such time as Western determines that monitoring is no longer necessary. If unacceptable avian mortality occurs, as determined by Western, mitigation will be developed in accordance with current best management practices.

2.2.11.10 Federally Listed Threatened, Endangered, Proposed, and Candidate Species and State-listed Threatened and Endangered Species

The following mitigation measures would be implemented to minimize impacts to Federally listed TEP&C and state-listed threatened and endangered (T&E) species.

To minimize impacts to bald eagles, SCE would use state-of-the-art turbine technology, including unguyed, tubular towers and slow-rotating, upwind rotors. Overhead power lines would be constructed per the *Suggested Practices for Raptor Protection on Power Lines–the State of the Art in 1996* (Avian Power Line Interaction Committee 1996). SCE would also conduct a raptor nest inventory during the nesting season prior to construction to determine if

bald eagles are nesting within or near the project area. If any active bald eagle nests are discovered, the FWS would be consulted to identify appropriate mitigation. SCE would set and enforce speed limits and remove carrion from project roads to avoid collisions with bald eagles feeding on road-kill.

The other four Federally listed species--whooping crane, interior least tern, piping plover, and pallid sturgeon--occur on the Platte River downstream and the three bird species may occur in the project area during spring and fall migration. Minor surface water depletions (e.g., less than 25 acre-ft per year) are considered to adversely affect these species but mitigation is not required for minor depletions (see Appendix F). Mitigation measures for the protection of surface water quality would also assist to minimize water quality-related impacts to these species. SCE would use state-of-the-art unguyed turbines with tubular towers and slow-rotating rotors to minimize potential for collision-related mortality to whooping crane, interior least tern, and piping plover.

To minimize impacts to burrowing owl, ferruginous hawk, long-billed curlew, mountain plover, black-tailed prairie dog, northern pocket gopher, and swift fox, SCE would limit the surface-disturbed areas to that which is needed for safe and efficient construction, and all disturbed areas not needed for operation would be reclaimed as soon as possible after construction is complete. Additional mitigation for some of these species is presented below.

To minimize impacts to black-tailed prairie dogs, mountain plover, ferruginous hawk, and burrowing owl, all black-tailed prairie dog towns within the project area would be avoided.

Because mountain plover adults and broods may forage along roads used for operations and maintenance, particularly at dawn and dusk, traffic speed and volume would be limited during the breeding season (April 10-July 10).

A raptor nest inventory would be conducted during the nesting season prior to construction and if ferruginous hawks are found nesting within or near the project area, construction would be

sequenced to avoid construction activities within 0.25 mi of any active ferruginous hawk nest until the young have fledged or the nest has been abandoned/failed.

To minimize impacts to state-listed birds, SCE would use state-of-the-art turbine technology, including unguyed, tubular towers and slow-rotating, upwind rotors. Overhead power lines would be constructed per the *Suggested Practices for Raptor Protection on Power Lines–the State of the Art in 1996* (Avian Power Line Interaction Committee 1996). Surveys for mountain plover and burrowing owl would be conducted prior to construction, and construction would be sequenced to avoid occupied habitat (see Section 3.7.2.4).

2.2.11.11 Sanitation

Construction sites would be maintained in a sanitary condition at all times. Waste materials (e.g., human waste, trash, garbage, refuse) would be disposed of promptly at an appropriate waste disposal site. SCE and its contractors would prohibit littering in the project area.

2.2.11.12 Existing Utilities

SCE would notify other authorized easement users of any crossings or overlaps. Care would be used, including hand/shovel excavation where appropriate, for all construction work that parallels or crosses existing subsurface facilities (e.g., pipelines, cables, power lines).

2.2.11.13 Miscellaneous

Ditches and Culverts. All irrigation, overflow, and roadway ditches; lead-offs from culverts or cut sections; and lead-in ditches crossed by the project would be cleared of any material that may obstruct water flow. Work would be accomplished so that reasonable conformance to the previous line, grade, and cross section is achieved. If any culverts clog due to project activities, the culvert would be cleaned to provide an unobstructed flow to and through the culvert. Any loose material on the backslope adjacent to the entrance of the culverts would be removed.

Litter. Construction vehicles would be equipped with litter disposal containers. Contractors would be informed that any littering in the project area may result in their immediate dismissal. Garbage and other refuse would be disposed of at authorized disposal sites or landfills. Construction sites would be maintained in a sanitary condition at all times.

Stormwater Pollution Prevention Plan. SWPPPs would be prepared to ensure that erosion is minimized during storm events and they would be kept on-site at all construction sites, as well as in the construction contractors' offices.

Traffic and Public Safety. Construction and operation are not expected to cause safety hazards or to inconvenience motorists or other adjacent users because construction-related traffic would be restricted to existing roads and routes approved by private landowners. Temporary use permits for access to interstate, state, and county roads would be obtained prior to construction. No traffic-related or other public safety problems were encountered during construction of the existing wind project west of Peetz (personal communication, March 2005, with Roger Japp, Logan County Under Sheriff).

2.3 ALTERNATIVES CONSIDERED BUT REJECTED

Because this is a proponent-initiated project, and because the proponent has acquired or would acquire easements to the land needed to construct and operate with wind project, and because the project is in conformance with Western's mission and the President's national energy policy, no alternatives to the Proposed Action except the No Action Alternative were considered.

2.4 NO ACTION ALTERNATIVE

Under the No Action Alternative, Western would not execute an interconnect agreement with SCE and the wind project would not be constructed.

A No Action decision would only be considered if one of the following conditions is met.

- If there were no acceptable means of mitigating significant adverse impacts to surface resource values, then this may trigger denial of the interconnect agreement and preparation of an environmental impact statement, unless the application is withdrawn by SCE.
- If the FWS concluded that the Proposed Action would likely jeopardize the continued existence of TEP&C species, then the interconnect agreement may be denied.

This EA will help determine whether the proposed project meets either of these conditions.

2.5 SUMMARY OF ENVIRONMENTAL IMPACTS

Table 2.6 presents a summary of environmental impacts and mitigation measures for the Proposed Action and the No Action Alternative. A detailed analysis of project impacts and mitigation measures is provided in Chapter 3.0.

Table 2.6 Summary of Environmental Consequences.

Resource	Possible Impacts from Proposed Action	Possible Impacts from No Action Alternative	Mitigation (includes mitigation measures discussed in Chapters 2.0 and 4.0)
Climate and air quality	Climate would not be impacted; temporary increases in fugitive dust during construction; long-term, minor increases in fugitive dust during O&M; beneficial impacts to air quality from generating electricity from a non-polluting resource	Loss of beneficial impacts to air quality from generating electricity from a non-polluting resource	Dust suppression during construction; proper maintenance of construction equipment; proper reclamation
Geology	No impacts to physiography; some life-of-project changes in topography due to cuts and fills; minor impacts to stream channels; no impacts from geologic hazards or mineral resources.	No impacts to physiography, topography, stream channels, geologic hazards, or mineral resources	Avoid steep slopes; proper reclamation
Paleontology	Possible inadvertent destruction of fossils during construction	No impacts	Preconstruction survey for fossils; if a site is discovered, halt construction and evaluate for significance; determine treatment as appropriate; employee education
Soils	Disturbance of 222 acres; LOP disturbance of 69 acres; some erosion and soil compaction	No impacts	Avoid areas with high erosion potential, where feasible; avoid activities when soils are too wet to support equipment; use of weed-free mulches, straw bales, silt fences, and water bars to control erosion; design and construct project roads properly; minimize disturbance; implement soil erosion practices until sites are permanently reclaimed; prompt stabilization and reclamation
Water resources	Some increased runoff and sediment would likely reach local drainages; accidental spills may occur; life-of-project consumption of 2,798,710 gallons of water; minor impacts to stream channels	No impacts	Avoid channel crossings and erosion-prone areas; cross channels at right angles; stabilize and reclaim promptly; appropriate road and turbine locate design and maintenance; locating refueling and staging areas at least 300 ft from streams; utilize sediment control measures; adhere to SWPPPs and SPCCPs
Floodplains and wetlands	No impacts	No impacts	No mitigation is warranted
Vegetation including noxious weeds	Initial disturbance of 222 acres of vegetation; life-of-project disturbance of 69 acres; potential for spread of non-native invasive species on surface-disturbed areas	No impacts	Minimize surface disturbance; manage construction sites; control noxious weeds; wash equipment; use weed-free seed mixtures and mulches; revegetate with native, adapted species; implement procedures to restore native prairie, including topsoil salvage and replacement

Table 2.6 (Continued)

Resource	Possible Impacts from Proposed Action	Possible Impacts from No Action Alternative	Mitigation (includes mitigation measures discussed in Chapters 2.0 and 4.0)
Wildlife and fisheries	Direct effects from collision-related mortality or electrocution; direct and indirect effects from 222 acres of temporary and 69 acres of life-of-project habitat loss; temporary displacement during construction; long-term displacement during operations; potential loss of breeding, nesting, and brood-rearing habitat; habitat fragmentation; inadvertent destruction of grassland bird nests; potential reduction in breeding and brood-rearing success; no impacts to fisheries	No impacts	Adhere to FWS guidelines, where practical; use state-of-the-art WTGs and wind industry standard practices; minimize noise; prohibit hunting, dogs, and possession of firearms by employees; set and enforce speed limits; limit traffic to designated roads; conduct raptor nest search and avoid activities in buffer around active nests; minimize disturbance; prompt reclamation, including restoration of shortgrass prairie; use best management practices to minimize erosion and harm from spills
Special status and sensitive species	Not likely to adversely affect bald eagles; may adversely affect species located downstream in the South Platte River; minor impacts to state-listed species; direct effects from collision-related mortality or electrocution; direct and indirect effects from 222 acres of temporary and 69 acres of life-of-project habitat loss; temporary displacement during construction; long-term displacement during operations; potential loss of breeding, nesting, and brood-rearing habitat; habitat fragmentation; inadvertent destruction of grassland bird nests; potential reduction in breeding and brood-rearing success.	No impacts	Adhere to FWS guidelines, where practical; use state-of-the-art turbines and wind industry standard practices; minimize noise; prohibit hunting, dogs, and possession of firearms by employees; set and enforce speed limits; limit traffic to designated roads; remove carrion from roads; conduct raptor nest and mountain plover searches and avoid activities in buffer around active nests; minimize disturbance; prompt reclamation, including restoration of shortgrass prairie; best management practices to minimize erosion and harm from spills; no mitigation is required for impacts to species located downstream in the South Platte River
Cultural resources	Some unidentified sites and artifacts may be disturbed or destroyed; beneficial impacts if significant cultural sites are discovered and recorded during construction	No impacts; potential loss of beneficial impacts.	If a site is discovered, halt construction and evaluate for eligibility to National Register of Historical Places; determine treatment as appropriate; employee education
Land use, transportation, and recreation	No change in landownership; loss of about 69 acres of cropland, rangeland, grazing land, wildlife habitat; and recreation; increased traffic and increased wear-and-tear on existing roads; beneficial additional land use of generating electricity from a renewable resource	No impacts	Project-related traffic yields to emergency vehicles and school buses; repair roads that are impacted by project activities; avoid heavy traffic when roads are too wet to bear traffic without creating ruts greater than 4 inches deep

Table 2.6 (Continued)

Resource	Possible Impacts from Proposed Action	Possible Impacts from No Action Alternative	Mitigation (includes mitigation measures discussed in Chapters 2.0 and 4.0)
Noise	Temporary short-term construction-related increases in noise; long-term turbine and substation noise and noise from O&M traffic	No impacts	Properly muffle all construction equipment; use state-of-the-art WTGs to reduce noise emissions; avoid noise-sensitive areas at critical times; use state-of-the-art turbines
Visual resources	Change in landscape due to presence of tall towers and rotating blades and flashing lights; presence of substation and project roads	No impacts	Use red pulsating lights for nighttime lighting and no lights during the day
Socioeconomics	Temporary beneficial economic impacts to local and state economies during construction; long-term benefits due to increased employment and tax base; no environmental justice concerns		Use local workers and contractors, where feasible; buy locally, where feasible
Hazardous materials	Possible spills		Implementation of appropriate spill prevention and control measures
Public health and safety	No impacts anticipated		Light turbiness in accordance with FAA requirements; fence high voltage facilities; maintain project area in sanitary condition at all times; prohibit littering; set and enforce speed limits; extinguish fires unless dangerous to life or limb